

KAISER GYPSUM COMPANY

SEATTLE PLANT

## Gypsum Wallboard Facilities History

### SEATTLE PLANT

Approval was given July, 1953 for Kaiser Engineers to commence design and construction of a gypsum wallboard and plaster plant to have a design capacity of 200,000 sq. ft. per day - 1/2" wallboard and 15,000 tons per year of plaster products. Site preparation commenced in September, 1953. Actual construction of facilities began January, 1954. Initial production occurred in September, 1954 and final completion by general contractor was October, 1954.

Present capacity is 425,000 sq. ft. per day - 1/2" wallboard. By 1971 plaster manufacture was phased out due to lack of market demand.

### LOCATION

The plant is located on a 9.7 acre site between East Marginal Way and the Duwamish River, adjacent to Glacier Sand and Gravel cement distribution and ready-mix facilities.

### GENERAL FACILITIES

Rock receiving hoppers and a belt conveying system were installed adjacent to an existing dock walkway and existing ship pier and bulkhead. Rock received from self-discharging ore carriers is conveyed to a 35,000 ton dome covered rock storage at a rate of 1000 tons per hour maximum.

Crushing and calcining equipment includes one 75 hp hammer mill crusher (80 tons per hour capacity); one 4 ft x 6 ft 3/8" screen rock screen (for cement retarder gypsum installed in 1961) (45 ton per hour capacity); two 100 hp, 54" Raymond roller mill grinders (17 ton per hour capacity each); two 10' diam. by 13' deep Ehram calcining kettles; two 4' dia. x 16' long 75 hp ball mill grinders; and necessary storage and feed bins. In 1974 modern, dry type dust collectors were installed on the calcining kettles replacing the original wet type collectors to conform to city and state effluent regulations.

Board manufacturing equipment includes various storage bins and material feeders feeding into a 43" inside diameter horizontal disc slurry pin mixer; an Ehram board forming machine with paper handling and feeding racks,

forming table and rolls, two 57" wide by 126' long forming belts, one 57" wide by 95' long powered roller conveyor, one rotary cut-off knife, one 80' long roller conveyor accelerator section, and a 20' long transfer conveyor feeding into an 8 deck, 230' long, 9 ft wide, steam heated Coe panel board dryer (an auxiliary gas fired burner was installed in #1 Zone of the dryer in 1959). Finished board take-off and booking from the outfeed end of the board dryer is by hand into a bundle taping machine.

Other facilities include a plant office building, a combination change house/machine shop, warehouse building, and a steam plant adjacent the board manufacturing building.

### RAW MATERIALS

Gypsum ore is supplied by a mexican subsidiary, Compania Occidental, S.A., from a quarry on San Marcos Island, Baja California. The ore is transported in self-discharging bulk carriers operated by Gypsum Carrier Inc., a Panamanian subsidiary.

Paper is supplied from a company-owned paper mill in San Leandro, California. Other raw materials and supplies are purchased from the most advantageous source.

### UTILITIES

Power is supplied by Seattle City Light at 13,800 volts.

Gas is supplied by Washington Natural Gas Company on an interruptible basis. Standby fuel is oil with 200,000 gallons on-site storage.

Water for domestic and process is provided by the City of Seattle. Water connections are provided on the dock to service ship requirements.

### WAREHOUSE AND SHIPPING

Maximum workable inventory is 4,000,000 sq.ft. Absolute maximum inventory is 6,000,000 sq.ft. Covered loading is provided for 5 railcars and 4 trucks.

IMPROVEMENTS

- 1959 - Gas fired direct heat burner installed - #1 Zone board dryer
- 1968 - Truck loading facilities
- 1972 - Dust control - Rock receiving and handling
- 1974 - a) Pre-heater coil added - #1 Zone board dryer
  - b) Continuous calcining automation of calcine kettles
  - c) Improve truck loading
  - d) Dry collectors - calcine kettles

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GENERAL

Personnel

	<u>Normal 5-Day</u>	<u>Normal 7-Day</u>
Hourly Employees:		
Board Plant	<u>38</u>	<u>50</u>
Accessories	<u>3</u>	<u>3</u>
Loading & Maintenance	<u>13</u>	<u>15</u>
Sub-total	<u>54</u>	<u>68</u>
Salaried:		
Exempt (all) *	<u>10.5</u>	<u>11.5</u>
Non-Exempt - Office	<u>1</u>	<u>1</u>
Lab & Quality	<u>1</u>	<u>1</u>
Sub-total	<u>12.5</u>	<u>13.5</u>
TOTAL:	<u>66.5</u>	<u>81.5</u>
*1/2 Plant Buyer		

Union

Name: Teamsters Local No.: 117

Operating Engineers 843

Plant Area: 9.7 acres (total)

Connected Horsepower: 2733 total

Railroad Service: Union Pacific

Fuel Storage: 200,000 gallons (standby oil)

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ROCK UNLOAD, STORAGE & CRUSHING

Dock:

Length 412' Width 3'

Load Bearing Capacity:

- (a) Truckcranes, 10-ton Trucks, etc.
- (b) 1½ Ton Trucks, Service Vehicles, etc. XX
- (c) Pickups, Small Lift Trucks, etc. XX
- (d) Personnel only Yes - on full dock

Water Depth (at low tide) 26.5 feet

Remarks:

Rock Storage:

Capacity (max.) 35,000 tons (w/o rehandling) 33,000 tons (w/rehandling)

Type drawdown feeder: (1) Gravity            (2) Apron XX (3) Feed Belts           

How many Feeders 3

How many Openings 3

Remarks:

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KG2002502

## ROCK UNLOAD, STORAGE &amp; CRUSHING (continued)

Belt Conveyors (Rock):

	Location	Width	(C.toC.) Length	Thickness	HP	(Ft./Min.) Speed	Tons/Hour
#1	From Ship to #3 conv.	30"	111'10"	5 ply	30	745	1000
#2	From Ship to #3 conv.*	30"	49'9"	5 ply	5	--	--
#3		30"	433'10-15/16"	5 ply	92	750	1000
#4	From Rock #3 into Shed	30"	364'	6 ply	92	755	1000
#5							
#6							
#7							

Remarks: \*Belt conveyor #2 has been discontinued.

Crusher:Made by Penn. Crusher Co. Type (hammer, jaw, roll) HammerHP 75 Capacity (tons/hr) 80 tons/hour ratedMax. size (crusher run) 2"

Remarks: Size Opening 36"x18"

Rock Dryer:Diameter N/A Length Capacity (tons/hr): Damp rock  Wet rock Type fuel (gas, oil) 

Remarks:

GRINDING & CALCINING

Feed Bins (Raymond Mills)	Capacity Tons/Max.	Capacity Tons/Live	Type (Steel, Wood)
1.	200	170	steel
2.	200	170	steel
3.			
4.			
5.			

Remarks

Screen (cement rock):

Size 4 ft X 6 ft.

Size (mesh) 3/8"

Capacity (tons/hour) 45 tons/hour

W. S. Tyler Screen installed 1961.

Pebble Load-out (cement rock):

Truck bin (max. capacity) \_\_\_\_\_

Rail bin (max. capacity) \_\_\_\_\_

Truck and/or Rail (max. capacity) \_\_\_\_\_

Remarks:

Pebble Gypsum is conveyed directly from crusher to truck or railcar.



GRINDING & CALCINING (continued)

Raymond Mills	#1	#2	#3	#4	#5
Manufacturer's No.	#5448	#5448			
Date Installed (year)	1954	1954			
Capacity (tons/hr @ 95%- 100 mesh)	10.0	10.0			
Capacity (tons/hr @ 85% - 100)	17.4	17.4			
Mill Drive (hp)	100	100			
Mill Drive (type: belts-direct)	belts	belts			
Fan Drive (hp)	75	75			
Grind Control (classifier - yes, no)	yes	yes			
Grind Control (mill feed only - yes, no)	no	no			
Heat Added (yes, no)	no	no			
Heat Source	--	--			

Remarks: Grind control by Whizzer Speed Setting, Feed Control, and Draft.

Kettle Feed Bins	#1	#2	#3	#4	#5
Capacity (tons-max)	34	34			
Capacity (tons-live)	24	24			
Type (wood, steel)	steel	steel			

Remarks:

## GRINDING &amp; CALCINING (continued)

Kettles	#1	#2	#3	#4	#5
Size (dia. x ht.)	10'x12'11"	10'x12'11"			
Charge (tons)	18	18			
Drive (hp)	40	40			
Drive (direct, gear)	direct	direct			
Hot Pit (number of screws)	4	4			
Hot Pit (HP per screw)	15	20			
Hot Pit (screw size)	6" Tapered	6" Tapered			
Hot Pit (time to empty)	40 min	35 min			
Length of Cycle (Kettle)	2½ hr	2½ hr			
Cycles per 24 hrs. (kettle)	9-10	9-10			

Remarks: Kettles presently on continuous calcining process.

Kettle Furnace	#1	#2	#3	#4	#5
Distance (floor to bottom center)	8'0"	8'0"			
Fuel (mcf per ton stucco)	1.2 mcf	1.2 mcf			
Burner (manufacturer)	Hauck	Hauck			
Burner Classification (high pressure-4#)	--	--			
Burner Classification (low pressure-4#)	low 15 oz	low 15 oz			
Burner Type (gas, or gas and oil)	gas/oil	gas/oil			

Remarks:

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PLASTER MILL

Storage Bins	Use Ballmill Feed, etc.	Capacity (max.)	Capacity (Live)	Dimensions
#1	Board Stucco	100 ton	90 ton	I.D. 18' Ht. 26'10"
#2	Board Stucco	100 ton	90 ton	I.D. 18' Ht. 26'10"
#3	Board Stucco	100 ton	90 ton	I.D. 18' Ht. 26'10"
#4	Board Stucco	100 ton	90 ton	I.D. 18'10" Ht. 26'10"
#5	Board Stucco	100 ton	90 ton	I.D. 18'10" Ht. 26'10"
#6				
#7				
#8				

Remarks:

Ground raw Gypsum & Baggae	No. Spouts	Type Force Flow-Paddle	Bags (per hour)	Mixer Capacity (lbs.)
#1	2	Paddle	200	10,000#
#2				

Ground raw gypsum screened 100% - 94 mesh for Accessory Plant.

Remarks:

KAISER GYPSUM COMPANY IS NO LONGER IN THE BUSINESS  
OF MANUFACTURING PLASTER --- some of the equipment is  
being used for other purposes as noted above.

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## Ball Mills

Remarks:	Hummer Screens:	1	4x8	1/4" Mesh	Board
		1	(4x4 top	#8 mesh)	
			(4x4 bottom	#22 mesh)	Not Used

Remarks: Bin capacity rated 60 "/Cu<sup>3</sup>

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Raw Materials	How Received (Bulk, Sacks, Drum)	Feed to Mixer (wet or dry)	FEEDER				Required Usage Per hr (max.)
			Type (Volume or Weight)	Automatic Manual or Remote	Name of Mfr.	Feed Rate per hr (max.)	
Stucco	Bulk	dry	500#/min	auto	Jeffery	15 ton	15 ton
Accelerator (a) End trim	Dust coll.	Dry	17#/min	manual	Jeffery	1 ton	1/2 ton
(a) Gypsum	bulk	dry	27#/min	manual	B.F. Gump	1 ton	1 ton
(b) Chemical	sack	dry	1.75#/min 6 gal/min	manual	Synton	200# dry	100# dry
Starch	sack	dry	3#/min	auto	Jeffery	300#	180#
Soap	Tank truck or drums	wet	.20#/min @ .4% sol.	auto	modified Hercules	15#	8#
Lignin	Tank truck	wet	2.0#/min	Manual Robertson/Meyers Reeves Springfield, Ohio		60# @ 50% sol	40# @ 50% sol
Paper Fiber	Bale	wet	280#/hr 3% sol.	Manual auto	Moyno	458#	280#
Do Cal 1033 <del>Raxxak</del>	Rail tank car	wet	56. P.M. 60% sol cup feeder	Manual	Moyno	400 gal	300 gal
Cerelose sugar <del>Bunker Oil</del>	sack	dry	.33#/min	manual	Syntron	200	20
Glass Fiber	box	dry	glass rope & cutter 60/120 end	manual	Finn & Fram	120#	72#
Vermiculite	sack	dry	450#/min	manual	Syntron	600#	450#
Water	City main	wet	tank & const. pressure pump	manual	Worthington	3500 gal	2700 gal
OTHER							

Admix Screw: Size 16" Control: (1) Automatic        (2) Manual XX (3) Remote         
Speed: (variable or fixed) variable

Mixer: Size: Dia. (inside) 43" Depth (inside) 5"  
HP 25 Speed (rotor) 240 rpm (March, 1975)  
Mfgr. \_\_\_\_\_

BOARD PLANT (continued)

Board Machine

Forming Belts	Width	Length (C to C)	Max. Speed (Ft/Min)
#1	57"	126.16'	90'
#2	57"	126.16'	90'
#3			
#4			
Live Rolls	57"	95.0'	90'
Accelerator Section	57"	80.0'	90'

Center line of Punch to center line of Knife = 14.0'

Punch: Speed (max. ft/min) 90' (NOT IN USE)

Knife: Length Control: (1) Limit Sw \_\_\_\_\_ (2) Mechanical XX

Speed (max. ft/min.) 90'

Type Drive: (1) Selsyn XX (2) Direct Current \_\_\_\_\_ (3) Mechanical \_\_\_\_\_

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BOARD PLANT (continued)

Dryer

Transfer Table: Length 20' Max. length can transfer 20'

Type Crossbelt Brake: (1) Air        (2) Magnetic XX (3) Elec. Plug       

Tipple: Type Brake: (1) Air XX (2) Magnetic        (3) Elec. Plug       

In-Feed Section: Length 30' Deck Drive: (1) Motor XX (2) From Dryer       

Enclosed Area: Number Decks 8 Total Length 230'  
Type Heat: (1) Steam        (2) Direct        (3) Steam & Direct XX

Zones	Length	Normal Temperature (1/2" WB)		Type Heat	Steam Pressure		Burner BTU - max	Fan HP
		Inlet	Exit		Inlet	Outlet		
#1	61	367	470	Direct gas and steam	245	180	12,500,000 BTU 1 hr.	60
#2	61	345	346	steam	240	180		60
#3	108	300	253	steam	235	180		60
#4								

Gravity Section: Length 38'

Board Breaker: Yes        No XX

Takeoff: (1) Mechanical        (2) Hand XX

Stackers: Wallboard - Yes XX No         
Lath - Yes        No XX

WAREHOUSE AND LOADING

Inventory (board products): Absolute maximum 6,000,000 sq.ft.  
Workable maximum 4,000,000 sq.ft.

Maximum Height of Stacks:

5/8 WB 15 ft. 4 in. Number pieces 256  
1/2 WB 15 ft. 8 in. Number pieces 320  
3/8 WB 17 ft. 0 in. Number pieces 480

Number railcars can load simultaneously (board products) 7  
" " " " (plaster products) n/a  
" " " under cover (board products) 5  
" " " " (plaster products) n/a

BOILER

Water Tube XX Fire Tube \_\_\_\_\_ Pressure 250 PSIG  
Capacity 29,300 #/hr. MFGD by Union Iron Works

BURNER

Name Coen Type BF17X  
Gas XX Oil (grade) Bunker C Combination \_\_\_\_\_

REMARKS:



## MOBILE EQUIPMENT

[illegible]

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